PSS14

Real-World Costs in Biologic-Naive Psoriasis Patients Initiating Apremilast or Biologics in a US Healthcare Claims Database

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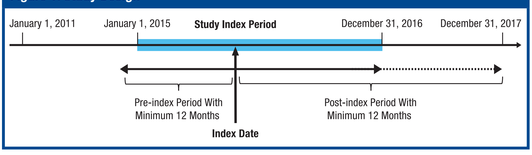
INTRODUCTION

- Psoriasis is a chronic, systemic, inflammatory disorder associated with high direct medical costs, particularly for patients with more severe disease.[1,2]
- As disease severity increases, treatment for moderate to severe psoriasis may include oral medications or biologics.[3]
- Apremilast is an oral phosphodiesterase 4 inhibitor indicated for the treatment of adult patients with moderate to severe plaque psoriasis who are candidates for phototherapy or systemic therapy.[4]
- A previous real-world study showed lower healthcare costs among biologic-naive patients with psoriasis using a different database.[5]
- The objective of this study was to examine healthcare costs among biologic-naive patients with psoriasis who initiated treatment with apremilast or a biologic.

METHODS

Study Design

Figure 1. Study Design



- This retrospective claims analysis used the IBM MarketScan Commercial and Medicare Supplemental databases (IBM Watson Health, Cambridge, MA) to identify biologic-naive psoriasis patients who initiated apremilast or a biologic agent for the treatment of psoriasis between January 1, 2015, and December 31, 2016 (**Figure 1**).

Inclusion Criteria

- Patients had to be ≥18 years of age on the index date.
- Patients who initiated a new treatment with apremilast or a biologic agent (adalimumab, certolizumab, etanercept, golimumab, infliximab, ixekizumab, secukinumab or ustekinumab) for psoriasis between January 1, 2015, and December 31, 2016, were included in the analysis.
- Patients had to have a psoriasis diagnosis.
  - At least 2 medical claims with an International Classification of Diseases, Ninth or Tenth Revision, Clinical Modification (ICD-9-CM/ICD-10-CM) diagnosis of psoriasis were required during the 12 months before the index date.
- Minimum of 12 months of continuous enrollment with medical and pharmacy benefits was required before and after the index date.

Exclusion Criteria

- Patients were excluded if they had a concurrent diagnosis of psoriatic arthritis at any time.
- If patients had a diagnosis of cancer in the 12-month pre- or post-index period, they were not included in the analysis.
- Patients with another biologic-indicated autoimmune condition in the 12-month pre- or post-index period were excluded.
  - Other biologic-indicated autoimmune conditions included ulcerative colitis, Crohn's disease, rheumatoid arthritis and other inflammatory polyarthropathies (including Felty's syndrome), ankylosing spondylitis or juvenile idiopathic arthritis.

Study Outcomes

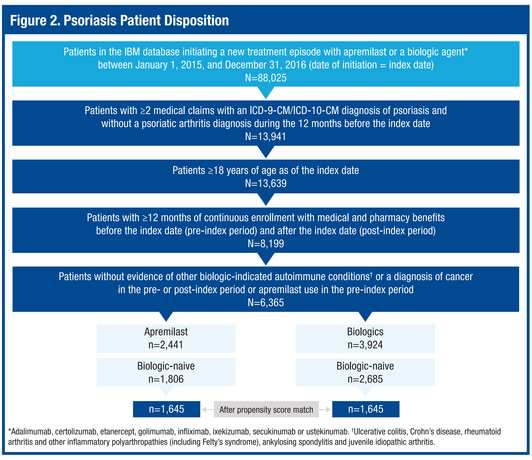
- Healthcare costs are based on paid amounts of adjudicated claims, including insurer and health plan payments, as well as patient cost sharing in the form of co-payment, deductible and co-insurance.
  - Healthcare costs reflect actual paid costs based on patient adherence, persistence and switching. These costs may appear to be lower than the wholesale acquisition cost, based on labeled dosing calculations and assumptions.
- The 6-, 12- and 18-month total healthcare costs were defined as the total sum of healthcare costs over a span of 6, 12 or 18 months from initiating treatment.
- Healthcare costs were rounded to the nearest whole dollar.

Statistical Analysis

- Baseline demographics and limited clinical characteristics between the apremilast and biologic cohorts were compared using a *t*-test and 1-way analysis of variance for continuous variables (summarized by mean and standard deviation) and a chi-square test for categorical variables (presented as count and percentage of patients in each category).
  - Descriptive results were stratified by the index agent.
- Because patients were not randomized to each cohort, 1:1 propensity score matching was used to adjust for possible selection bias.
  - The propensity score was defined as the probability of being treated with apremilast given the baseline characteristics.
- Logistic regression was used to estimate the propensity score for individual patients with the following variables:
  - Age, gender, region, payer (commercial or Medicare), plan type, index year, prescriber specialty (dermatology, rheumatology, other), Charlson Comorbidity Index score, pre-index cost, number of prior systemic agents, previous usage of non-steroidal anti-inflammatory drugs/cyclooxygenase-2 inhibitors and previous usage of corticosteroids or phototherapy.
  - These measures were selected based on the available data from the IBM database and the literature as variables that might be related to both cohort membership and outcome.
- A *P* value ≤0.05 was considered statistically significant.

RESULTS

Figure 2. Psoriasis Patient Disposition



*Adalimumab, certolizumab, etanercept, golimumab, infliximab, ixekizumab, secukinumab or ustekinumab. †Ulcerative colitis, Crohn's disease, rheumatoid arthritis and other inflammatory polyarthropathies (including Felty's syndrome), ankylosing spondylitis and juvenile idiopathic arthritis.

- Between January 1, 2015, and December 31, 2016, a total of 88,025 patients initiating a new treatment episode with apremilast or a biologic agent were identified in the IBM database (**Figure 2**).
- After inclusion and exclusion criteria were applied and patients were propensity score matched, 1,645 biologic-naive patients were included in the apremilast group and 1,645 biologic-naive patients were included in the biologic group (**Figure 2**).

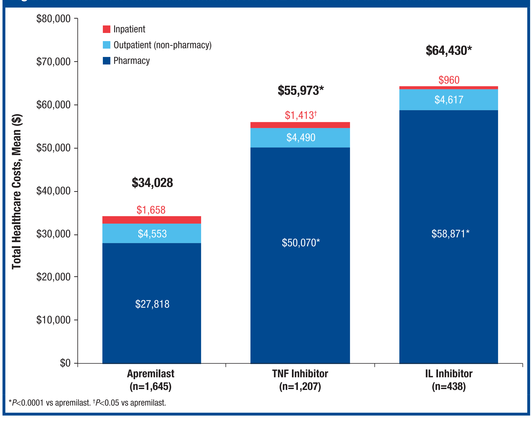
RESULTS (cont'd)

Table 1. Baseline Characteristics by Cohort After Propensity Score Matching

Characteristic	Apremilast n=1,645	TNF Inhibitor n=1,207	*P* Value	IL Inhibitor n=438	*P* Value
Age, mean (SD), years	47.5 (13.0)	48.1 (12.6)	0.2237	46.4 (13.3)	0.1122
Female, n (%)	851 (52)	624 (52)	0.9856	209 (48)	0.1352
Charlson Comorbidity Index score, mean (SD)	0.45 (0.93)	0.47 (0.94)	0.6924	0.39 (0.81)	0.1450
Baseline healthcare cost per month, mean (SD)	$867 ($1,407)	$799 ($1,210)	0.3812	$850 ($1,252)	0.8172
Number of prior systemic agents, n (%)					
0	1,390 (85)	999 (83)	0.4620	379 (87)	0.5543
1	236 (14)	193 (16)	-	54 (12)	-
2+	19 (1)	15 (1)	-	5 (1)	-

- After propensity score matching, baseline characteristics were similar across the apremilast, tumor necrosis factor (TNF) inhibitor, and interleukin (IL) inhibitor groups (**Table 1**).

Figure 3. Mean Total Healthcare Costs Over a 12-Month Post-index Period



*P<0.0001 vs apremilast. †P<0.05 vs apremilast.

- Total healthcare costs were significantly lower for biologic-naive patients treated with apremilast ($34,028) compared with biologic-naive patients treated with a TNF inhibitor or an IL inhibitor ($55,973 and $64,430, respectively; *P*<0.0001) (**Figure 3**).
- The majority of total healthcare costs were attributed to pharmacy costs in all treatment groups, although pharmacy costs were significantly lower for patients treated with apremilast (**Figure 3**).
- Outpatient costs (non-pharmacy) for all treatment groups were similar (**Figure 3**).

Table 2. Mean Total Healthcare Costs at 6- and 18-Month Post-index Periods

Patients Included in the 6-Month Analysis	Apremilast n=1,645	TNF Inhibitor n=1,207	IL Inhibitor n=438
Total healthcare costs at 6 months, mean	$18,771	$32,166*	$39,924*
Inpatient	$818	$547	$229
Outpatient (non-pharmacy)	$2,426	$2,109	$2,390
Pharmacy	$15,526	$29,510*	$37,322*
Patients Included in the 18-Month Analysis	**n=1,126**	**n=822**	**n=273**
Total healthcare costs at 18 months, mean	$47,934	$77,535*	$89,822*
Inpatient	$2,613	$2,103	$2,651
Outpatient (non-pharmacy)	$6,276	$6,299	$7,316
Pharmacy	$39,046	$69,134*	$79,890*

*P<0.0001 vs apremilast.

- Similar results were seen at 6 and 18 months post-index (**Table 2**).

LIMITATIONS

- Results are generalizable only to individuals with commercial health coverage or private Medicare supplemental health coverage in the United States.
- Propensity score matching may not have eliminated all biases that could account for the differences in outcomes.
- Reasons for switch are not captured in the data.

CONCLUSIONS

- Continued real-world evaluation of costs associated with psoriasis therapies is needed as new treatments are approved.
- Total healthcare costs were lower for apremilast compared with both TNF and IL inhibitors in biologic-naive psoriasis patients over a 6-,12- and 18-month follow-up period.
- Differences in total healthcare costs seen between study groups were driven by pharmacy costs.

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DISCLOSURES

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